(54) Title: SYSTEM AND METHOD FOR DISPLAYING IMAGES

(57) Abstract: A system (10) for displaying a set of images on a display device (60) includes a storage repository (30) that is accessible by a pay-TV service (40) connected to a display device (60). The storage repository (30) captures and stores the set of images and creates selectable images. The selectable images are selectable by a selection device (50) of the pay-TV service (40) and displayed on the display device (60).

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SYSTEM AND METHOD FOR DISPLAYING IMAGES

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FIELD OF THE INVENTION

The invention relates to a system for viewing images. In particular, the
15   invention relates to viewing images using a pay-TV service.

BACKGROUND OF THE INVENTION

The Internet is a global network that allows computers and information
20   appliances to communicate with various service providers such as merchants, on-line
news organizations, auction sites to name a few. Despite the increasingly large
penetration of the Internet into people's homes, many households cannot currently
access the Internet, or not everyone in the household is able to do so. While the
Internet is opening up new opportunities and functions for those lucky and able to be
25   connected, there is a growing fear that many people will be left behind.

Many companies connected to the Internet are providing storage sites for
people to deposit their digital pictures so that these pictures can be viewed by distant
relatives and friends by accessing the Internet. In order to create digital photographs,
one must have either a digital camera or have a film camera, process the film, and
30   either digitize the negative or print by themselves or an outside service. The digitized
pictures must then be uploaded onto the Internet by either connecting the digital
camera to a personal computer (PC) connected to the Internet, or by inserting a
memory device, such as a floppy diskette or flash card, into the PC. To view the
pictures, a PC or some other specialized Internet viewing device must log on to the

Internet. Often times, special software is also required in order to display the pictures on the computer's screen. Both uploading and downloading of pictures to/from the Internet require expensive computer equipment and specialized knowledge. These requirements restrict the number of friends and family that can not only view the pictures but also share them as well. What is desired is a way in which all members of the family, from small tots to grandma, can share their treasured moments without having to purchase and learn to use a personal computer.

SUMMARY

A system for displaying a set of images on a display device includes a storage repository that is accessible by a pay-TV service connected to a display device. The storage repository captures and stores the set of images and creates selectable images. The selectable images are selectable by a selection device of the pay-TV service and displayed on the display device.

BRIEF DESCRIPTION OF THE DRAWINGS

Fig. 1 is block diagram of one embodiment of the invention.

Fig. 2 is a block diagram of a first alternative embodiment of the invention.

Fig. 3 is a block diagram of a second alternative embodiment of the invention.

Fig. 4 is an exemplary flowchart of a process used by embodiments of the invention.

Fig. 5 is an exemplary diagram of the storage repository and information stored on storage mediums used by embodiments of the invention.

DETAILED DESCRIPTION OF THE PREFERRED AND ALTERNATE EMBODIMENTS

One aspect of the invention is to allow non-Internet connected customers to
5   view digital photograph or other collections that are stored preferably on an Interet
web-site as sets of images. Many photo repository web sites use a digital media
platform, a storage medium, to store and retrieve the sets of images. In the invention,
a digital media platform (DMP) is a component of a larger storage repository for
viewing a variety of digital media images, such images including pictures, movies,
10   and created artworks. The DMP is preferably connected to the Internet via the storage
respositoryto allow users to download and retrieve images placed on the storage
medium within the DMP. The DMP typically has a large multiple pentabyte
distributed database. The invention connects this storage medium of the storage
repository using a direct connection such as a "back-end pipe" to a pay-TV system
15   infrastructure. The direct connection can optionally be the Internet, an intranet, a
wireless network, or other high speed/high capacity link. This "back-end pipe" allows
the pay-TV customer to handle processing, security, and image manipulation on the
storage repository. The pay-TV system provides the method of site-specific access
which to view the set of images. From a customer perspective, this invention does not
20   require a customer to acquire any new equipment other than that provided by the pay-
TV system, which typically already exist in most homes. Thus by utilizing existing
television industry pay-TV capability, access to image web storage repositories exist.
This approach provides a simple mechanism for enabling wide spread viewing and
sharing of photographic or document images without the need for a personal
25   computer.

Pay-TV systems include cable TV, satellite TV, and private leased systems.
The pay-TV system is connected to a display device, typically a common TV. The
pay-TV systems are designed to allow customers to select viewing choices and the
customer "pays-per-view." The storage repository is equiped to allow a customer to
30   group one or more images into a set of images, i.e. a "slide-show," that is
communicated to the pay-TV system and made available for viewing by the customer

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and requested designated parties. When the "slide-show" is available for viewing, the customer and designated parties are optionally notified by mail, e-mail, voice mail, notes posted at a toll-free bulletin board, or with a notice automatically sent to identified subscribers on the pay-TV system. The "slide-show" is stored either on the

5   storage repository, or optionally on a separate storage medium at the pay-TV system or both. Once notified, designated viewers enable their pay-TV system to receive and view the "slide-show." The enabling can be done either through dialing a telephone number and entering the appropriate touch tone or voice activated vocal codes, or by optionally using a remote control device connected to the pay-TV service.

10   Fig. 1. is a block diagram of one embodiment of the invention. The system 10 allows for displaying a set of images on a display device 60. The display device 60 is connected to a pay-TV service 40. The pay-TV service 40 can be controlled by a connected selection device 50. The connection from the selection device 50 to the pay-TV service may be wireless, such as by radio frequency (RF), infra-red (I/R), or

15   ultra-sonic technology known to those skilled in the art. Optionally, the selection device may be connected using wires or through a communication network such as a telephone network or computer network such as the Internet. The connection from the pay-TV service 40 to the display device 60 is typically an RF modulated signal but may also be a video modulated signal, or a digital composite signal. The pay-TV

20   service 40 is connected to a storage repository 30 using a "back end pipe"12 which provides preferably a high speed, high bandwidth connection. The storage repository 30 comprises a storage medium for holding multiple set of images 20 that are captured and stored on it. The set of images 20 may be from one or many sources. The storage repository also has circuitry to convert the set of images into a video viewable "slide-

25   show" that is transmitted to the pay-TV service 40. The back end pipe 12 also contains a communication channel to allow for control, processing and security between the storage repository 30 and the pay-TV service 40. The selection device 50 may be either a telephone with selection performed by touch-tone or voice commands. Alternatively, the selection device 50 may be a remote control unit connected to the

30   pay-TV service 40 via a remote decoder unit that is located near the display device 60.

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Preferably, the storage repository 30 can accept images from multiple sources which include unprocessed film, scanned photos and negatives, and digitized photographs. Optionally, other documents other than photographs can be captured and stored. Any document which can be viewed from digital format can be included within the set of images. Thus, the system can be used to view real estate documents, legal forms, bills and statements, and other created images such as e-mail and web pages.

Fig. 2 is a block diagram of a first alternative embodiment of the invention in first alternative system 14. In this embodiment, the display device 60 is shown connected to a decoder box 46 which is part of the pay-TV service 40. The decoder box 46 is located near the display device to receive specific broadcasts that are programmed into the decoder box based on subscribed services requested by the customer viewing the display device. In this embodiment, the pay-TV service 40 has two possible methods of being controlled. A selection device 50 is connected to the decoder box and its commands are relayed to the pay-TV service 40 using the communication channel 54. Optionally, the viewer of display device 60 can use a telephone 52 to contact the pay-TV service 40 and enter commands using the touch pad or optionally, using voice commands. The pay-TV service 40 includes an encoder circuit for encrypting transmissions to prevent unauthorized viewing. The decoder box 46 receives the video signal transmitted over the communication channel 54. The decoder box 46 contains a decryption circuit which decodes the subscribed content for the viewer of the display device 60. Optionally, but preferably, the pay-TV service 40 includes a local storage medium 44 such that sets of images transmitted from the storage repository 30 can be optionally downloaded at non-peak times and to ensure continual displaying of the set of images on display device 60 should the video link 58 fail during broadcast. The storage medium 44 can be either an analog video storage device such as a video cassette recorder or a video disk recorder or optionally a digital media platform. Video link 58 may be an analog communication medium or a high speed data network. The command channel 68 is preferably a digital link but optionally can be a modulated analog channel. Video link 58 and command channel 68 may be discrete or combined into a single communication channel. The set of

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images 20 are preferably captured and stored on the storage repository through a direct connection to the storage repository 30. The storage repository 30 is optionally connected to the Internet 70. By being connected to the Internet 70, digital images can optionally be captured and stored on the storage repository 30 using personal

5   computers or other Internet enabled devices. In addition, the contents of the storage repository are optionally available for viewing over the Internet in case some potential viewers which to use their personal computers as display devices rather than the pay-TV service.

       Also shown in Fig. 2 is the ability of the system to produce output in the form

10   of photographs or other hard-copy media such as paper, vellum, or film. Several output devices 80 can be connected to the system 14 at various points. The output device 80 can be located and connected to the storage repository 30, the pay-TV service 40 or the decoder box 46 or any combination thereof. By locating the output device 80 at the storage repository or pay-TV service, a wide selection of available

15   output is preferably available as the output devices can be more complex and support multiple customers. By locating an output device 80 near the display device 60 via the decoder box 46, hard-copy output can be created directly to the customer. Several different output devices 80 exist to provide hard-copy output. Typically, the output device 80 connected to the decoder box 46 is a personal computer printer such as an

20   HP Ink-Jet color printer of which several models are commercially available. The hard-copy output devices 80 at the storage repository and pay-TV services may also include Ink-Jet printers but also wide format plotters and poster sized printers.

       Fig. 3 is a block diagram of a second alternative embodiment in second alternative system 16. In this embodiment, a photo processor 90 is preferably

25   connected to the Internet 70 or optionally, directly connected to the storage repository 30 using a direct communication channel 36. The photo processor is able to accept standard film cartridges, develop and process the film. The film is then scanned and the digital images produced sent over the Internet 70 to the storage repository. Optionally, the photo processor may be located near the storage repository 30 and thus

30   the digital images are directly captured and stored on the storage repository 30. Another option is to have a film cartridge 22 processed by a film processor 32 and

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then scanned by film scanner 34 and directly captured and stored on storage repository 30. In addition, the photo processor 90 can receive information from the Internet 70 from a customer via the pay-TV service 40 and storage repository 30 concerning which images to create hard-copy output 92. Further, customers can send a set of

5   images 20 via the Internet 70 to storage repository 30 to be captured and stored. By using the Internet, requested images from the customer do not need to be created on hard-copy but optionally can be sent over the Internet 70 to an E-mail mailbox using predetermined commands on selection device 50 or telephone 52.

        The communication channel 96 between the pay-TV service 40 and the

10   decoder box 46 can be performed optionally by using a satellite 48 to provide either preferably bi-directional communication or unidirectional communication of the video signal. If a unidirectional communication channel 96 is used, the control channel between the decoder box 46 and the pay-TV service 40 is preferably performed using a telephone linkup.

15   Another options are available to the viewer of the display device 60 from the pay-TV service. One option is to provide a text processor 82 preferably within the decoder box 46 or optionally in the pay-TV service 40 main site. The text processor 82 is programmable with the selection device 50 and allows the customer or viewer to annotate the set of images displayed on the display device 60. This annotation is

20   performed by superimposing the created text content onto the displayed images on the display device 60. Another option is to provide background music during the viewing of the images. The background music is selected using a preprogrammed command from selection device 50 or telephone 52. The background music may either be sent along with the video of the set of images or created synthetically or reproduced at the

25   decoder box. The background music is played using one or more speakers 62 connected to the display device.

        Fig. 4 is an exemplary block diagram of a process method 100 implemented on the embodiments of the invention to allow viewing of a set of images on a display device. First in block 102 a set of images is captured. This process step can be

30   performed such as by simply receiving digital images from the Internet as in block 140, or by processing and scanning photographic film as in blocks 150 and 152. After

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the set of images has been captured, they are stored on the storage repository as described in block 104 and 154. Once the set of images has been stored, a customer can access a pay-TV service that is connected to the storage repository as in block 106. The customer selects a desired set of images from those available to him on the storage repository as in block 108. Once selected, in block 110 the storage repository then creates a video stream or slide-show of the set of images so that they can be presented to the customer on the display device. Optionally, in block 112, a customer can select background music or other programmed noises (such as rushing water, crickets chirping, etc.) to be played along with the presentation of the set of images. The presented set of images and choice of background music is then transmitted to a pay-TV service connected via a back-end pipe to the storage repository in block 114. Optionally, the pay-TV service may store the transmitted set of images on a local storage medium in block 116. Further, the customer in block 118 may program a text processor located within the pay-TV system to annotate the set of images. If the text processor is used, the output from the text processor is superimposed on the set of images in block 120. In order to provide security, the set of images is optionally encoded in block 122 before being further communicated to a decoding box. If encoded, the set of images are decoded within the decoding box in block 124 to recover the viewable set of images and optionally the background music. The background music if used is played in block 126. The recovered set of images are displayed on the display device in block 128. In response to predetermined commands on a selection device connected to the pay-TV service, the customer can create hard-copy output in block 130 or transmit a copy of the displayed image using email in block 132.

Fig. 5 is an exemplary diagram illustrating the storage repository block diagram. Also illustrated is how the set of images and an attached profile tag are stored on storage medium 38 of storage repository 30 in a record 28.

A communication channel 98 includes video link 58 and command channel 68 either discretely or combined. The communication channel 98 is the high speed, wide bandwidth back-end pipe that connects to the pay-TV service. Communication channel 98 connects to the storage medium 38, slide show creation circuitry 90,

control circuitry 92, processing circuitry 94, and security circuitry 96. The slide show creation circuitry 90 converts digital images stored on the digital medium 38 into a viewable, selectable, and optionally editable video signals that can be shown over the pay-TV video system to a display device such as a TV. The control circuitry 92 is

5   used to control the slide show creation circuitry 90, processing circuitry 94, security circuitry 96 and storage medium 38. The processing circuitry 94 is used to store and retreive images from the storage medium 38 to communication channel 98 and the slide show creation circuitry 90. The security circuitry 92 is used to prevent unauthorized access to the images stored on storage medium 38 over communication

10   channel 98.

        Storage medium 38 includes a record 28. The record 28 includes the set of images 20 and an attached profile tag 26. The profile tag includes preferably object info 64, customer info 24 and asset info 66. The object info 64 describes the characteristics of the image data. The customer info 24 includes data relating to the

15   ownership of the customer. The asset info describes other information that relates to ownership and control. The combined associated info 56 includes such items as the customer's user identification, the customer's preferences for viewing, whether the set of images can be edited or modified, the time the slide show is to viewed and distribution list, to name a few.

20   By providing for a system in which digitized sets of images can be created into a slide show that is accessible by pay-TV systems, customers and their designated viewers are able to watch their treasured memories without having to learn and operate a personal computer. The benefit is to provide for a larger viewing audience without the need for the viewers to spend the large capital cost of a computer or the

25   time necessary to learn how to operate it.

        What is claimed is:

CLAIMS

1.   A system for displaying a set of images on a display device, comprising:

       a storage repository for capturing and storing the set of images, the storage

repository having a slide show conversion circuitry for converting the set of images

into a selectable images; and

       a pay-TV service having a selection device, said selectable images accessible

by said pay-TV service wherein said selectable images are selectable by said selection

device, and wherein said pay-TV service is connected to the display device for

displaying the selected images.

2.   The system of claim 1, wherein said selection device is a telephone.

3.   The system of claim 1, wherein said selection device is a remote control unit.

4.   The system of claim 1, wherein said storage repository can capture images

from unprocessed photographic film.

5.   The system of claim 1, wherein said storage repository can accept digital

images.

6.   The system of claim 1, further comprising an output device connected to said

storage repository for creating at least one hard-copy image from of the set of images

in response to a command from said selection device.

7.   The system of claim 1, further comprising an output device connected to said

pay-TV system for creating at least one hard-copy image from the set of images in

response to a command from said selection device.

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8.   The system of claim 1 wherein said storage repository is connected to said pay-TV service using an analog video signal for displaying the set of images and a communication channel for selecting the set of images.

5   9.   The system of claim 1 wherein said pay-TV service is connected to said display device using a satellite.

10.   The system of claim 1 wherein the presentation of the display of the set of images is controllable from said selection device.

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11.   The system of claim 1 wherein said display device includes a speaker and wherein background music is selectable by said selection device for playing on said speaker.

15   12.   The system of claim 1 wherein the set of pictures are capable of being deleted by said selection device in response to a predetermined selection.

13.   The system of claim 1 further comprising a text processor connected to said pay-TV system wherein said text processor is programmable by said selection device

20   wherein output from said text processor is superimposed on the display of the set of images.

14.   The system of claim 1 further comprising a communication system connected to said storage repository and at least one photo processor wherein in response to a

25   selection on said selection device, at least one image from the set of images is transmitted over the communication system to the at least one photo processor.

15.   The system of claim 1 further comprising a communication system connected to said storage repository and the Internet.

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16.   The system of claim 15 wherein in response to a selection on said selection device at least one image from the set of images is transmittable over the communication system to at least one e-mail mailbox connected to the Internet.

5   17.   The system of claim 15 wherein the storage repository is capable of capturing the set of images using the communication system and the Internet.

18.   The system of claim 1 wherein the pay-TV system includes a storage medium and wherein the set of images are storable on said storage medium.

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19.   The system of claim 1 wherein the pay-TV system includes an encryption device and wherein the display device includes a decryption device and wherein the encryption device is capable of encoding the set of images and the decryption device is capable of decoding the encoded set of images before displaying the set of images

15   on the display device.

20.   The system of claim 1 wherein the set of images includes a profile tag; the profile tag identifying at least the ownership of the set of images.

20   21.   A method of using the system of claim 1 to display at least one image on the display device, the method comprising the steps of:
            capturing and storing a set of images on the storage repository;
            accessing the pay-TV service;
            selecting the at least one image from the stored set of images using the

25   selection device; and
            displaying the selected at least one image on the display device.

22.   A method for displaying a set of images, comprising the steps of:
            capturing and storing a set of images on a storage repository;

30   accessing a pay-TV service connected to said storage repository, said pay-TV service having a selection device;

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selecting said set of images using said selection device; and

displaying said selected set of images on a display device connected to said pay-TV service.

5   23.   The method of claim 22, wherein the step of selecting further comprises the step of selecting said set of images using a telephone as the selection device.

24.   The method of claim 22, wherein the step of selecting further comprises the step of selecting said set of images using a remote control unit.

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25.   The method of claim 22, wherein the step of capturing and storing further comprises the steps of:

processing photographic film;

scanning the processed photographic film thereby creating a set of digital

15   images; and

storing the set of digital images on the storage repository.

26.   The method of claim 22, wherein the step of capturing and storing further comprises the steps of:

receiving a set of digital images; and

20   storing the set of digital images on the storage repository.

27.   The method of claim 22, further comprising the steps of:

receiving a command from the selection device;

creating at least one hard copy image of the set of images using an output

25   device connected to the storage repository.

28.   The method of claim 22, further comprising the steps of:

receiving a command from the selection device;

creating at least one hard copy image of the set of images using an output

30   device connected to the pay-TV service.

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29.   The method of claim 22, further comprising the steps of:

        transmitting the set of images from the storage repository to the pay-TV

service using an analog video signal; and

        communicating over a communication channel between the storage repository

and the pay-TV service the selected set of images to display.

30.   The method of claim 29 wherein the steps of transmitting and communicating

are performed using a satellite.

31.   The method of claim 22, further comprising the step of presenting the set of

images in response to entries made from the selection device.

32.   The method of claim 22, wherein said display device includes a speaker and

wherein the method further comprises the steps of:

        selecting background music using said selection device; and

        playing the background music on said speaker.

33.   The method of claim 22, further comprising the steps of:

        receiving a command from the selection device; and

        deleting at least one of said set of pictures in response to the command.

34.   The method of claim 22, wherein a text processor is connected to said pay-TV

system and further comprising the steps of:

        programming the text processor using the selection device; and

        superimposing output from the text processor onto the display of the set of

images.

35.   The method of claim 22, wherein a communication system is connected to the

storage repository and at least one photo processor, further comprising the steps of:

        selecting a predetermined command on the selection device; and

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transmitting at least one image from the set of images from the storage repository to the at least one photo processor using the communication system.

36.   The method of claim 22, wherein the storage repository is connected to the Internet, the method further comprising the steps of:

selecting a command on said selection device;

transmitting at least one image from the set of images over the Internet to at least one e-mail mailbox connected to the Internet.

37.   The method of claim 22, wherein the storage repository is connected to the Internet; and wherein the step of capturing further includes the step of receiving the set of images from the Internet.

38.   The method of claim 22, wherein the pay-TV system includes a storage medium, the method further comprising the step of storing the set of images on the storage medium.

39.   The method of claim 22, wherein the pay-TV system includes an encryption device and wherein the display device includes a decryption device, the method further comprising the steps of:

encoding the selected set of images using the encryption device thereby creating an encoded set of images; and

decoding the encoded set of images before the step of displaying the selected set of images.

40.   The method of claim 22, wherein the set of images includes a profile tag, the method further comprising the step of identifying at least the ownership of the set of images using the profile tag.

41.   A system for displaying a set of images on a display device using the method of claim 22, the system comprising:

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the storage repository for capturing and storing the set of images;

the pay-TV service connected to the storage repository, the pay-TV service having a selection device for selecting the set of images stored on the storage repository;

5   the display device connected to the pay-TV service wherein the selected set of images is displayed.

42.   A displayed set of images using the method of claim 22

10   43.   A hard copy image using the method of claim 28.

44.   An email message having at least one image using the method of claim 36.

45.   A photograph using the method of claim 35, further comprising the step of
15   processing the at least one image by the photo processor thereby creating the photograph.

46.   A system for displaying images, comprising:

means for receiving a set of images and profile from a customer;

20   means for storing said set of images and said profile on a storage repository;

means for accessing a pay-TV service connected to said storage repository by said customer wherein said customer selects said set of images; and

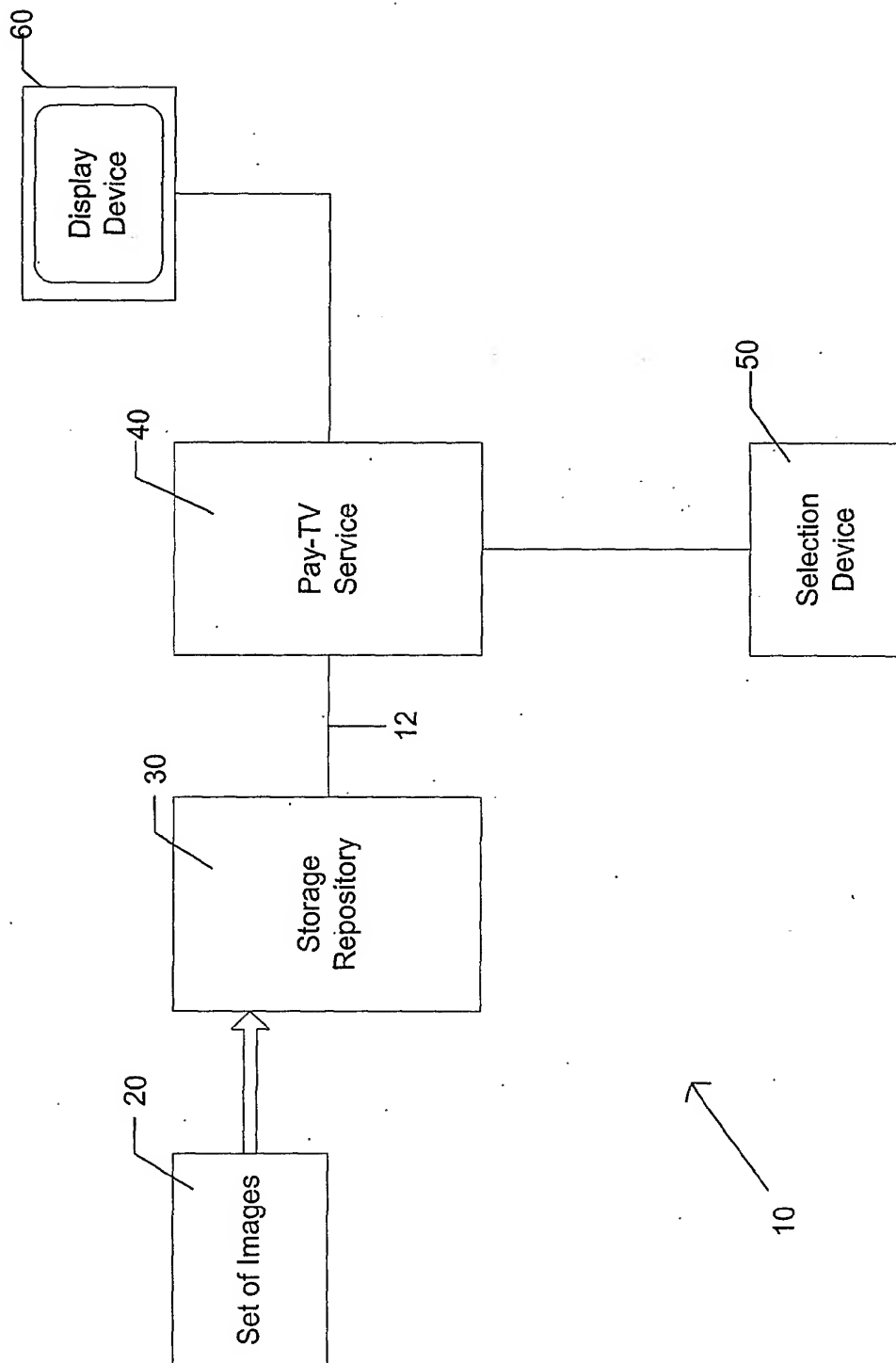means for displaying said selected set of images on a display device connected to a pay-TV service.
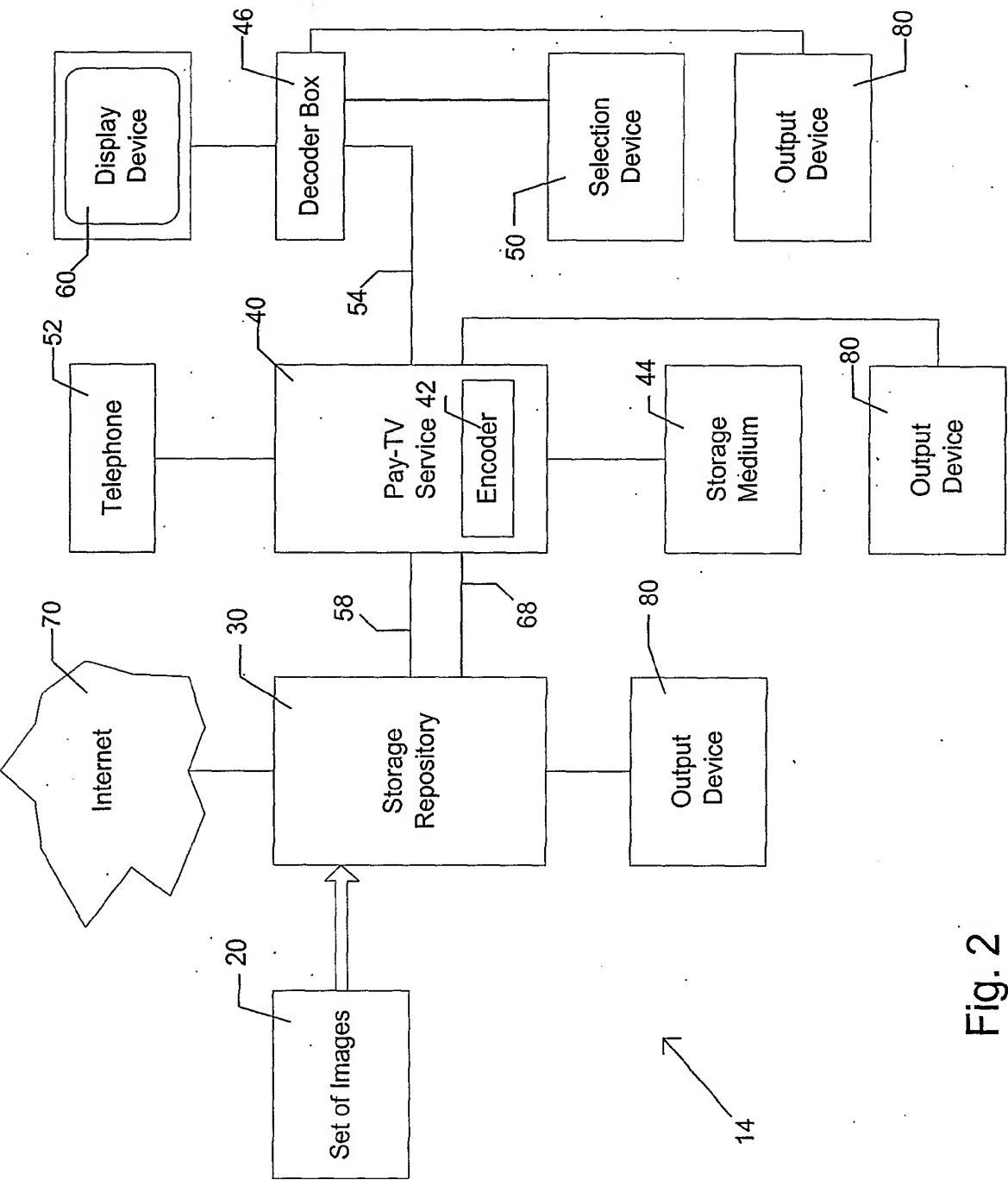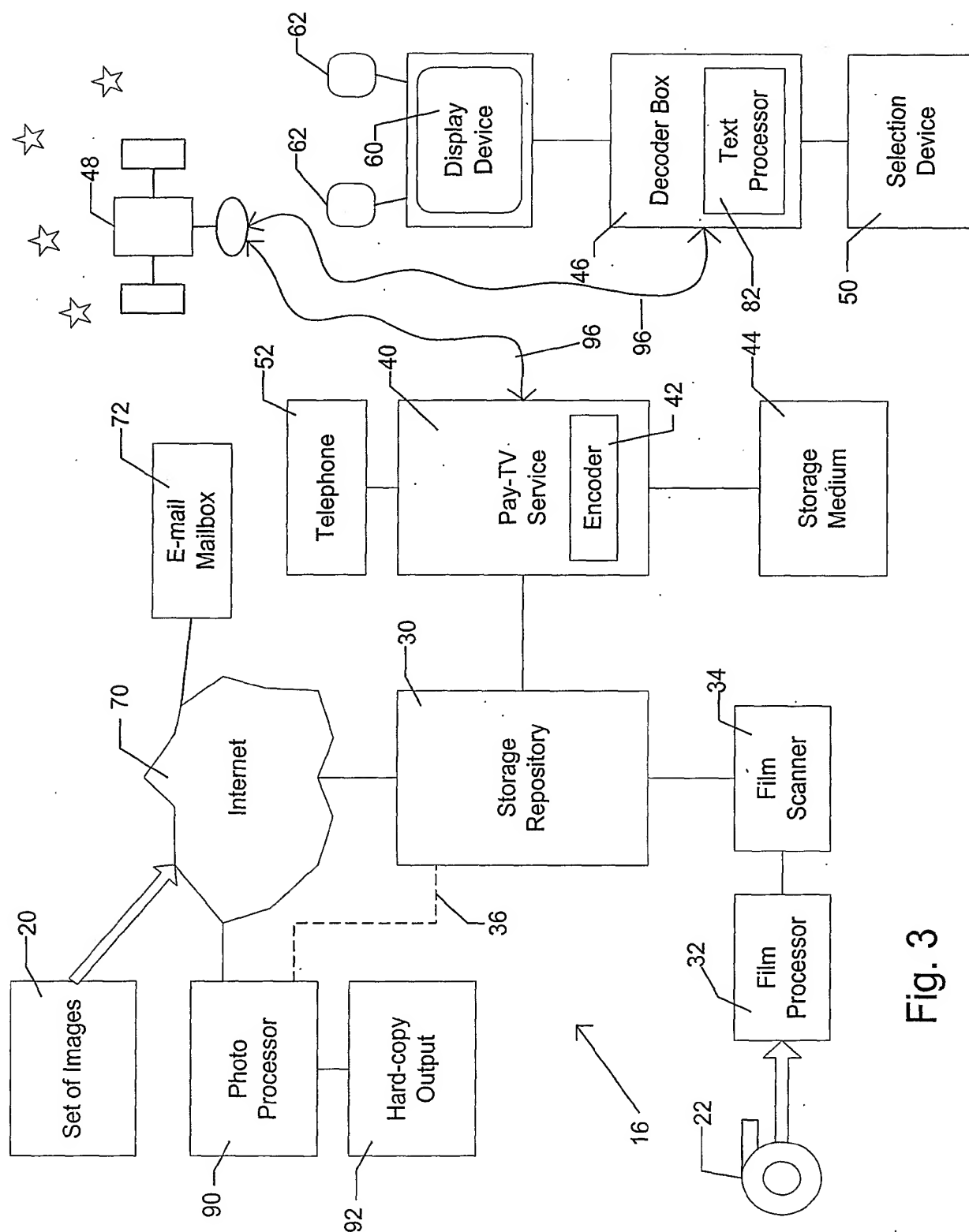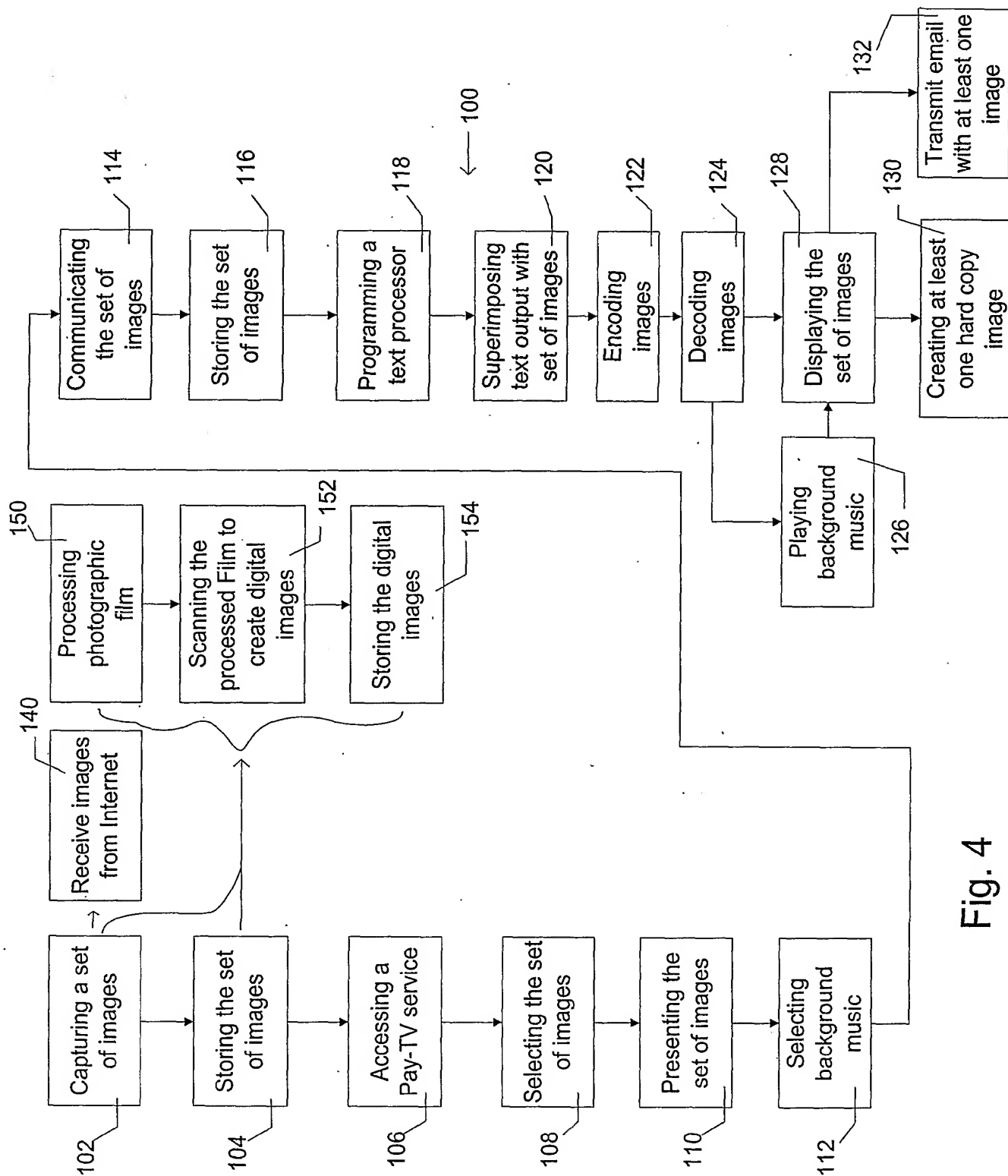
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Fig. 1

Fig. 2

Fig. 3

Fig. 4